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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/620,376	07/17/2003	Tomokazu Hayashi	10517/173	9710

23838 7590 08/14/2009

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EXAMINER	
HODGE, ROBERT W	

ART UNIT	PAPER NUMBER
1795	

MAIL DATE	DELIVERY MODE
08/14/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/620,376	HAYASHI ET AL.	
	Examiner	Art Unit	
	ROBERT HODGE	1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06 August 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3,4,8-14 and 17-24* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3,4,8-14 and 17-24* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 8/6/09 has been entered.

Response to Arguments

Applicant's amendments and respective remarks, filed 8/6/09, with respect to the rejection of claims 1, 3, 4, 8-14 and 17-24 under 35 U.S.C. 112, second paragraph, have been fully considered and are persuasive. The rejection of claims 1, 3, 4, 8-14 and 17-24 under 35 U.S.C. 112, second paragraph has been withdrawn.

Applicant's arguments filed 8/6/09 have been fully considered but they are not persuasive. Applicants continue to reiterate that the seal of the prior art cannot and will not provide the same function as the seal of the instant invention because there is no disclosure in Schmid of a seal that is selected for its ease of removability. First and foremost applicants are arguing functional limitations; see MPEP 2114 for guidance regarding functional limitations. A prima facie case has been made on several occasions stating that due to the breadth of the seal materials listed in the Markush group of claims 1 and 24, the adhesive seal reads on the limitations of the claims and

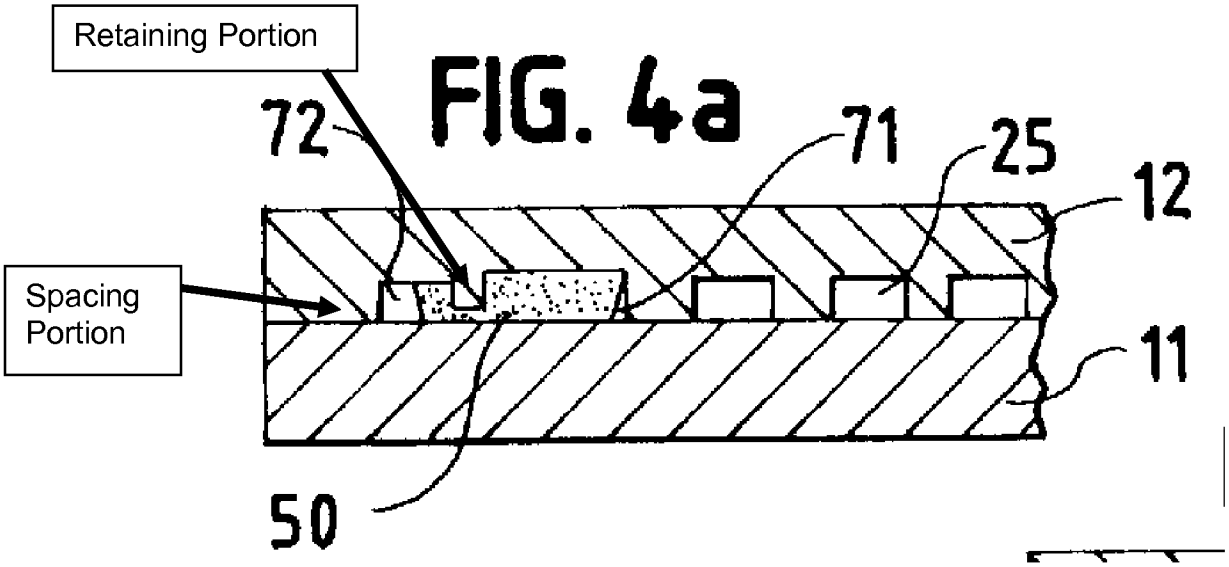
by doing so the burden was shifted to applicants to prove in the form of **evidence** (not arguments – emphasis added) that the seal of Schmid cannot and will not function the same as the instant invention. To date applicants have not met their burden of proof and continue to argue functional limitations. With regards to the Inoue reference applicants are taking the grounds of rejection out of context, it is quite clear in the grounds of rejection that paragraph [0020] of Inoue is being relied upon for the teaching of a gel sealant, which is one of the listed materials in applicants Markush groups that would exhibit the properties that applicants continue to argue. It is noted that Schmid alone was used to reject claims 1 and 24 and has not been combined with Inoue for said claims as applicants argue in their remarks. Schmid and Inoue had only been combined in a rejection of claim 23. Therefore as clarified above because applicants have still failed to meet their burden of proof by a showing of **evidence** that the seals of the prior art cannot perform the same function as the instant invention the grounds of rejection will be maintained. Further with regard to the "ease of removability", it is submitted that any seal is removable and the functional recitations that have been added to the claims do not impart any further structure and it is submitted that the prior art is fully capable of the functional recitations as recited in the instant claims, see MPEP 2114.

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1, 3, 4, 8-14, 17-22 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,080,503 hereinafter Schmid.

Schmid teaches solid polymer electrolyte fuel cell stacks (which as defined by applicants in the instant specification paragraph [0048] is a low temperature type fuel cell) comprising a plurality of components including but not limited to separators and electrolyte membranes with an adhesive material (inherently pressure sensitive) that is elastomeric and is selected for its specific compatibility of physical and chemical characteristics to be used in solid polymer electrolyte fuel cell stacks, said adhesive material being adhesive and interposed between the plurality of fuel cell components wherein a retaining portion and a spacing portion are formed on a surface of a separator plate (illustrated in figure 4a below);



wherein the spacing portion is formed along an outer periphery of the separator, wherein the adhesive material, the spacing portion and the retaining portion are all formed within the fuel cell unit, the stack further comprising manifolds that are formed

inside the electrochemically active area and the adhesive material is formed along the outer edge (see column 6, lines 43-46) (since the spacing portion is clearly at an outer periphery of the entire fuel cell unit and the manifold is formed at an interior position such as the electrochemically active area, the spacing portion will clearly be formed outside of the manifold) (see figure 4a, column 1, lines 55-61, column 2, lines 30-33, column 5, lines 12-46, column 6, line 22 – column 8, line 67). Schmid further teaches that the adhesive material can be electrically insulating and is applied across the substantial entire contact surfaces of the separator plates (see column 5, lines 25-26 and line 34 and column 8, lines 35-36). It is also quite clear that Schmid is using the same sealant 50 throughout the entire fuel cell and that said same sealant is also used on one of the components that has the gas passages, see Figures 3a, 3b, 3c, 5a and 5b. It is submitted that the seal of Schmid is capable of being removable and is "non-solid" due to the breadth of "pressure-sensitive adhesive material" in the Markush groups and the burden is shifted to applicants to show in the form of **evidence** (not arguments) that the seal of Schmid does not exhibit the properties as recited in claims 1 and 24 that is the sealant material is not a "non-solid" and the sealant can **never** be removed.

Schmid as described above teaches the claimed invention except for a spacing portion formed separately from the plurality of components (claim 1) and a retaining portion formed concave or convex toward the sealant (claim 11). With regards to these features the Examiner has found no criticality of either of the above listed features in the instant specification. For Example in paragraph [0054] the first sentence describes that

the spacing portion may be integrally or separately formed. There is no disclosure of whether one formation is more critical than the other and furthermore the discussion of separately forming is only mentioned in the first sentence of paragraph [0054] and is not even illustrated in the drawings. Also in paragraph [0056] it is stated that "Rather than being such a concave or convex portion, the retaining portion 33 may merely be a plane portion…" this too shows no criticality to the shape of the retaining portion. Therefore it would have been obvious to one having ordinary skill in the art to separately form the spacing portion of Schmid since it has been held that constructing a formerly integral structure in various elements involves only routine skill in the art (Nerwin v. Erlichman, 168 USPQ 177, 179) and it further would have been obvious to one having ordinary skill in the art to form the retaining portion in either a convex or concave shape since it has been held that a change in shape is generally recognized as being within the level of ordinary skill in the art (In re Dailey 149 USPQ 47, 50 (CCPA 1966) and Glue Co. v. Upton 97 US 3, 24 (USSC 1878)).

Regarding claims 3 and 24, Schmid teaches in figure 3b two retaining portions 55 that face each other on separators of the fuel cell stack. At the time of the invention it would have been obvious to one having ordinary skill in the art to combine the embodiments of Figure 3b and 4a to provide two retaining portions that face each other and a spacing portion since the combination of the two embodiments provides a predictable variation of the Schmid invention. See MPEP 2141 (III) Rationale A, KSR v. Teleflex (Supreme Court 2007) and Boston Scientific Scimed Inc. v. Cordis Corp., 89 USPQ2d 1704 (Fed. Cir. 2009). It further would have been obvious to duplicate the

retaining portion since it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art. St. Regis Paper Co. v. Bemis Co., 193 USPQ 8.

Regarding claim 8, Schmid teaches the claimed invention except for another spacing portion on another component. It would have been obvious to one having ordinary skill in the art at the time of the invention was made to provide an additional spacing portion on another component of the fuel cell of Schmid, since it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art. St. Regis Paper Co. v. Bemis Co., 193 USPQ 8. It should be noted that due to the many different embodiments disclosed in the instant specification embodying, 1, 2, 3, 4…etc spacing portions on separate components of the fuel cell no criticality is shown for having two spacing portions.

Regarding claim 22, as seen in figure 5a, Schmid teaches that the sealant 50 is disposed on both sides of manifold 30.

It is noted that claims 1 and 24 recite functional limitations of the intended use of removing and separating components of the fuel cell, it is submitted that Schmid is fully capable of being separated as recited in the instant claims, see MPEP 2114.

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Schmid as applied to claim 1 above, and further in view of U.S. Pre-Grant Publication No. 2002/0197519 hereinafter Einhart.

Schmid does not teach that the retaining portion is concave or convex.

As seen in figures 8 and 9, Einhart teaches a concave retaining portion for a seal in a fuel cell assembly.

As stated above no criticality of the shape of the retaining portion has been found in the instant specification for said feature such as in paragraph [0056] wherein it states that "Rather than being such a concave or convex portion, the retaining portion 33 may merely be a plane portion…" and therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to form the retaining portion in a concave shape in Schmid as taught by Einhart to provide a complex cross-sectional shape to retain the sealing material that provides a larger surface area for the sealing material to bond to and also since it has been held that a change in shape is generally recognized as being within the level of ordinary skill in the art (In re Dailey 149 USPQ 47, 50 (CCPA 1966) and Glue Co. v. Upton 97 US 3, 24 (USSC 1878)).

Claims 1, 3, 4, 8-14 and 17-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schmid as discussed and applied above, and further in view of U.S. Pre-Grant Publication No. 2002/0031698 hereinafter Inoue.

Schmid teaches a pressure-sensitive adhesive material as discussed above but does not teach that the sealant is a gel.

Inoue teaches a fuel cell stack assembly comprising a plurality of components that are sealed together using a gel sealant (abstract and paragraph [0020]).

At the time of the invention it would have been obvious to one having ordinary skill in the art to substitute a gel sealant for the adhesive in Schmid as taught by Inoue in order to provide a uniform seal between the fuel cell components thereby making the

sealing uniform and maintaining gas-tightness between the fuel cell components. Simple substitution of one known element (Inoue's Gel sealant) for another (Schmid's adhesive sealant) would achieve the predictable results of providing a uniform seal between the fuel cell components thereby making the sealing uniform and maintaining gas-tightness between the fuel cell components. See MPEP 2141 (III) Rationale B, KSR v. Teleflex (Supreme Court 2007).

It is submitted that the seal of Schmid as modified by Inoue is capable of being removable and is "non-solid" due to the breadth of "gel material" as recited in claims 1, 23 and 24 and the burden is shifted to applicants to show in the form of **evidence** (not arguments) that the seal of Schmid as modified by Inoue does not exhibit the properties as recited in claims 1, 23 and 24 that is the sealant material is not a "non-solid" and the sealant can **never** be removed.

It is noted that claim 23 recites functional limitations of the intended use of separating components of the fuel cell, it is submitted that Schmid as modified by Inoue is fully capable of being separated as recited in the instant claims, see MPEP 2114.

Claims 1, 3, 4, 8-14, 17-22 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schmid as discussed and applied above, and further in view of U.S. Patent No. 6,596,427 hereinafter Wozniczka.

Schmid teaches a pressure-sensitive adhesive material as discussed above but does not teach that the sealant is a high viscosity material such as a thermoplastic material.

Wozniczka teaches a fuel cell stack assembly comprising a plurality of components that are advantageously sealed together using a thermoplastic material (column 8, lines 43-47).

At the time of the invention it would have been obvious to one having ordinary skill in the art to substitute a thermoplastic sealant for the adhesive in Schmid as taught by Wozniczka in order to provide a seal that prevents edge shorts in the Membrane Electrode Assembly. Simple substitution of one known element (Wozniczka' Thermoplastic sealant) for another (Schmid's adhesive sealant) would achieve the predictable results of providing a seal that prevents edge shorts in the Membrane Electrode Assembly. See MPEP 2141 (III) Rationale B, KSR v. Teleflex (Supreme Court 2007).

It should be noted that in paragraph [0070] of the instant specification, thermoplastic material is disclosed as a preferred material for the sealant material. Therefore it is submitted that the seal of Schmid as modified by Wozniczka is in fact not only capable of being removable, it is in fact removable and is "non-solid", since thermoplastic material is disclosed as a preferred material for the sealant by applicant and also due to the breadth of "high viscosity material" in the Markush groups and the burden is shifted to applicants to show in the form of **evidence** (not arguments) that the seal of Schmid as modified by Wozniczka does not exhibit the properties as recited in claims 1 and 24 that is the sealant material is not a "non-solid" and the sealant can **never** be removed.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ROBERT HODGE whose telephone number is (571)272-2097. The examiner can normally be reached on 8:00am - 4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Robert Hodge/
Examiner, Art Unit 1795